Attachment I

PG&E's Comments on the South Yuba River Listing for Water Temperature

WATER SEGMENT: Yuba River, South (below Lake Spaulding to Englebright Reservoir)

POLLUTANT: Water Temperature

CVRWQCB LISTED SOURCE: Source Unknown

STATUS of Proposed 2008 303(d) LISTING: List (New Decision proposed for 2008 list)

CVRWQCB BASIS: After review of the available data and information, Central Valley Regional Water Quality Control Board (CVRWQCB) staff concluded that the entire 41+ mile section of the South Yuba River between Lake Spaulding and Englebright Reservoir should be placed on the section 303(d) list because applicable water quality standards were exceeded for water temperature.

PG&E RECOMMENDATION: Do Not List any river segments of the South Yuba River between Lake Spaulding and Englebright Reservoir

Address potential for listing the South Yuba River by water segments (federally recognized individual river reaches) and list or do not list based upon known available data or evidence for each individual river reach (water segment). Water temperature assessments should also consider the optimal water temperature regimes for typical fish assemblages that would be expected to occur in the specifically referenced California stream segments. Arguments provided in PG&E's Water Segment Delineation Factsheets explain the necessity for determining appropriateness of listing or delisting based upon water segmentation of long rivers with regard to environmental, biological, physical differences, as well as known availability of data within each individual reach (Attachment A).

FACTSHEET BACKGROUND: The CVRWQCB has proposed listing of the entire South Yuba River from below Lake Spaulding to Englebright Reservoir (a 41+ mile length of river) due to exceedances of water temperature guidelines found in the US Environmental Protection Agency (US EPA) Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards (US EPA 2003) which also references water temperature guidelines developed by Sullivan et al. (2000) for Pacific Northwest Salmonids.

CVRWQCB Line of Evidence Used in the Factsheet

The CVRWQCB's factsheet used one line of evidence in support of their listing decision. The data referenced in the CVRWQCB's South Yuba River Factsheet (below Lake Spaulding to Englebright Reservoir) are from bulb spirit thermometer readings that were collected as part of the South Yuba River Citizens League (SYRCL) River Monitoring Program (SYRCL 2007). Thirteen sites were monitored by SYRCL monthly from 2001 through 2006. The SYRCL referenced steelhead water temperature thresholds presented in a report prepared by Sullivan et al. (2000) and referenced in the US EPA Region 10 guidance (US EPA 2003), which assess the risk of growth loss and suggest water temperatures of 18°C and 21°C for maximum weekly average and the acute threshold, respectively for Pacific Northwest Salmonids. The CVRWQCB factsheet states that 50 of 58 SYRCL water temperature measurements exceeded the 21°C water temperature guideline proposed by Sullivan et al. (2000) and by the US EPA Region 10 guidance document (US EPA 2003).

PG&E COMMENTS:

First, the South Yuba River changes substantially as it flows from below Lake Spaulding to Englebright Reservoir due to changes in elevation (from approximately 5,000 feet in the river below Lake Spaulding to approximately 530 feet at Bridgeport near Englebright Reservoir). There is a steep gradient resulting in approximately a 2,000 foot drop in elevation from below Lake Spaulding to a point in the river that is approximately 1 mile below the confluence with Fall Creek at river mile 35 (approximate elevation at this point is 3,000 feet). The river continues to decrease in elevation gradually reaching a final elevation of approximately 530 feet at Bridgeport near Englebright Reservoir.

Changes in elevation also result in changes in relative air temperatures that will be encountered within each reach (i.e., relative air temperatures will increase with decreases in elevation and the influence of these warmer air temperatures will be greater in the downstream reaches). Thus, the South Yuba River (below Lake Spaulding to Englebright Reservoir) should be evaluated by segment, and we have outlined the specific segments and the data correlated with each segment in the following discussion. PG&E has provided factsheets for each reach of the South Yuba River (Jordan, Rucker, Fall, Canyon, Poorman, and Humbug) in this submission. It should also be noted that there are two other short reaches below Lake Spaulding; the "South Yuba below Spaulding Dam Reach" which is 0.2 miles long and goes from Spaulding Dam to Spaulding No. 2 Powerhouse, and the "South Yuba below Spaulding No. 2 Powerhouse Reach" is 0.7 miles and goes from PH #2 to Jordan Creek confluence. However, there are no data available within either of these very short reaches, and they are not included in the factsheets provided by PG&E below. PG&E's factsheets include information regarding the health of each river segment based upon the most recent readily available data from the specific water segments (see Figure I-1).

Second, PG&E believes that the guidelines in the US EPA Region 10 Water Quality Standard document (US EPA 2003) and proposed by Sullivan et al. (2000) do not necessarily apply to the conditions present in California streams. Thus, the existence of a number of exceedances of the guidelines that were developed specifically for Pacific Northwest fish populations should not result in the 303(d) listing of a California stream which exhibits different fish species and native fish assemblages than would be encountered in the Pacific Northwest. Consideration should be placed on the fact that current Basin Plan water use designations are inappropriate and unachievable as demonstrated by unimpaired hydrology for this river. Further, there are numerous concerns with using the US EPA Region 10 and Sullivan guidelines in this context, including the fact that the annual maximum water temperature could not be met naturally in many points along the South Yuba River below Lake Spaulding to Englebright Reservoir.

1. **The US EPA Region 10 Guidance was developed specifically for Pacific Northwest States and Tribes.** *The EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards* was a product of a three-year interagency effort involving data and information gathered from Idaho, Oregon, and Washington specifically. No data or information pertaining to California streams or fish populations were considered in the preparation of this guidance and therefore do not apply.

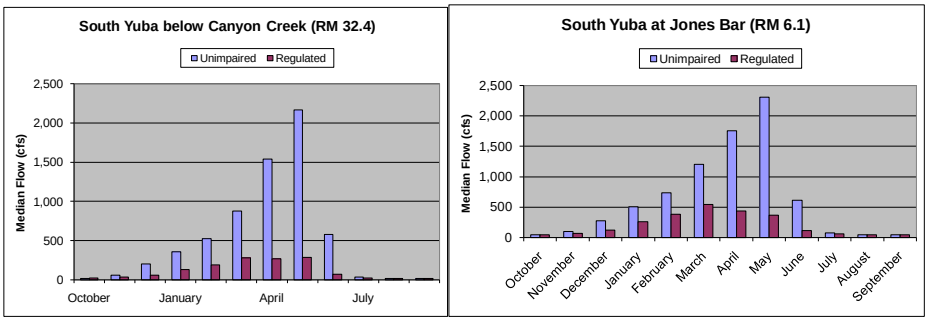
2. **The criteria were developed to protect specific species of fish (such as Bull Trout and Steelhead)**

   Fish populations occurring in Sierra streams are significantly different populations that exhibit different life history strategies and growth dynamics than Northwest populations. Northern fish species are generally acclimated to colder stream water temperatures. Consequently, they spend relatively longer time in their native streams, grow slower to out-migrant size, and return at an older age to spawn than their southern counterparts. Adopting "Annual Maximum upper threshold criteria" from these northern species (based on the US EPA Region 10 and Sullivan et al. report) and applying them to California populations, without considering local species, local hydrology data, and local water temperature data is problematic.

3. **Most California or Sierra streams do not meet the US EPA Region 10 or Sullivan guidelines under natural conditions.**

   Existing water temperature data do not support the use of a 21°C annual maximum water temperature because regulated flows in the South Yuba River (below Lake Spaulding to Englebright Reservoir) in the summer (July-September) are virtually identical to the unimpaired flows in the summer as shown in the plots below. Based on the fact that water

temperature data collected under regulated flows are greater than 20°C within approximately 10 miles below Lake Spaulding (PG&E 2008), it is essentially impossible that unimpaired hydrology would result in water temperatures lower than those observed under regulated flows in the summer. Furthermore, water temperatures in the South Yuba River above Lake Spaulding also exceed 20°C (PG&E 2008). Therefore, it is highly unlikely that the South Yuba River (below Lake Spaulding to Englebright Reservoir) under unimpaired hydrology would have ever supported the Basin Plan designation for COLD beneficial uses.



Ms. Sullivan also stated that many streams and rivers in California are probably not going to be able to achieve the suggested 21°C guideline water temperature naturally, and trying to would be difficult [SWRCB hearing transcript, *Consideration of a Resolution to Approve the 2002 Federal Clean Water Act Section 303(d) list of Water Quality Limited Segments*, dated February 4, 2003, on page 141 (lines 22-25)]. Therefore, the Sullivan and/or the US EPA guidelines should only be used as screening tools to indicate whether additional review of biological data or other lines of evidence are necessary to determine if the water segment is impaired.

Finally, the one line of evidence provided in the CVRWQCB's factsheet does not represent all of the known available data that should be considered when making a listing decision for the 303(d) list of impaired water bodies for the South Yuba River (below Lake Spaulding to Englebright Reservoir). PG&E is currently in the process of relicensing the Drum-Spaulding Project and data are being collected between 2007 and 2010 in support of the relicensing effort. Historical data and data collected in 2007 was presented in the Pre-Application Document (PAD) for the project, which is a publicly available document (PG&E 2008).

Table I-1 shows distribution of fish relative to river mile and water temperature observed during 2004 South Yuba River snorkel surveys (Gast et al. 2005 and PG&E 2008). These data show that there are more pikeminnow in the lower section of the South Yuba River and more trout in the upper section of the South Yuba River. These data support the conclusion that the lower South Yuba River is dominated by warm water species while the upper

South Yuba River is dominated by cold water species. Stream fish population studies have also been conducted in 2008 and will also be conducted in 2009 as part of the relicensing effort.

Table I-1. Distribution of fish relative to river mile and stream water temperature observed during 2004 South Yuba River snorkel surveys.

River Mile (beginning at head of Englebright Reservoir)[1]	Tributary Inflow	South Yuba Water Temperature (°C)	Rainbow Trout	Pikeminnow Hardhead[2]	Pikeminnow	Hardhead	Suckers	Rainbow (Fry Lane)	Non-game (Fry Lane)
0.0									
3.5		25.1		●*					●
3.9		23.3	●	●*		●			●
4.2	Owl Creek								
5.7		25.1		●*			●		●
6.7		23.1			●		●		
10.4		24.0	●	●*	●				
12.0		20.7	●	●*					●
15.2		22.9	●	●*			●		●
16.0	Spring Creek	21.9	●*	●			●	●	●
18.1		24.5	●*	●			●	●	●
19.7		24.3	●*	●					●
20.6	Humbug Creek	22.8	●*				●	●	
23.3		22.6	●*	●			●	●	
24.5		21.4	●*	●				●	●
27.5		20.9	●*				●	●	
28.1	McKilligan Creek								
28.3		20.3	●*	●*			●		●
28.8	Poorman Creek								
35.8		18.1	●*					●	
36.0		17.3	●*					●	
40.6		17.3	●*						

Source: Gast et al. 2005

1 RM from Gast et al. (2005) slightly different than Licensee's RM measurement.

2 Pikeminnow and hardhead less than 4" in length not discernible.

* Higher population levels (Rainbow trout and Pikeminnow/Hardhead only).

Biological data suggest that the upper South Yuba River supports cold water species, primarily rainbow trout and brown trout (introduced); and the lower South Yuba River transitions into more of a warm water fish assemblage of native Sacramento pikeminnow and hardhead (Gast et. al. 2005). These findings are consistent with the observed range of water temperatures that have been documented in the upper and lower portions of the South Yuba River between Lake Spaulding and Englebright Reservoir (i.e., the upper South Yuba supports a COLD beneficial use and the lower South Yuba River supports a WARM beneficial use).

Therefore, it would be premature to list the South Yuba River for water temperature based upon the availability of additional data (such as water temperature data and biological data) that may provide additional support to

the conclusion that this river would never have been able to support the Basin Plan designated COLD water use under unimpaired hydrology.

Factsheets for each reach of the South Yuba River (Jordan, Rucker, Fall, Canyon, Poorman, and Humbug) are provided in this submission (see Figure I-1). Factsheets for all of the reaches in the South Fork Yuba River demonstrate that these reaches should not be listed for water temperature because known available data do not indicate impairment or there are no known data available to make a determination regarding listing. There is no justification for listing any river segment of the South Fork Yuba River on the 303(d) list of impaired water bodies for water temperature.

A listing cannot be based solely on one factor such as the US EPA Region 10 or the Sullivan et al. guideline to determine listing status, and listings cannot rely on a single source of data when there are numerous sources of data that are available and indicate that there is no impairment; nor would there have been impairment under the unimpaired hydrology (i.e., natural conditions).

References

Gast, Tom, Mark Allen, and Scott Riley. 2005. *Middle and South Yuba Rainbow Trout (Onchorhynchus mykiss) Distribution and Abundance Dive Counts, August 2004*. Included as Appendix G of CDWR 2006.

PG&E. 2008. *PG&E Pre-Application Document (PAD) for Drum-Spaulding Project*, prepared by DTA for PG&E. June 2008.

PG&E and NID. 2009 Unpublished Data. *Technical Memorandum 3-1, Stream Fish Populations 2008 Report, prepared for NID's Yuba-Bear Hydro Project (FERC 2266-096) and PG&E's Drum-Spaulding Hydro Project (FERC 2310-173),* unpublished data 2009.

PG&E and NID. 2009 Unpublished Data. *Technical Memorandum 2-2, Water Temperature Monitoring 2008 Progress Report, prepared for NID's Yuba-Bear Hydro Project (FERC 2266-096) and PG&E's Drum-Spaulding Hydro Project (FERC 2310-173),* unpublished data 2009.

Sullivan, K., D. J. Martin, R. D. Cardwell, J. E. Toll, and S. Duke. 2000. *An analysis of the effects of temperature on salmonids of the Pacific Northwest with implications for selecting temperature criteria.* Sustainable Ecosystems Institute. Portland, OR. 192pp.

U.S. Environmental Protection Agency (US EPA). 2003. *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards.* EPA 910-B-03-002. Region 10 Office of Water, Seattle, WA.

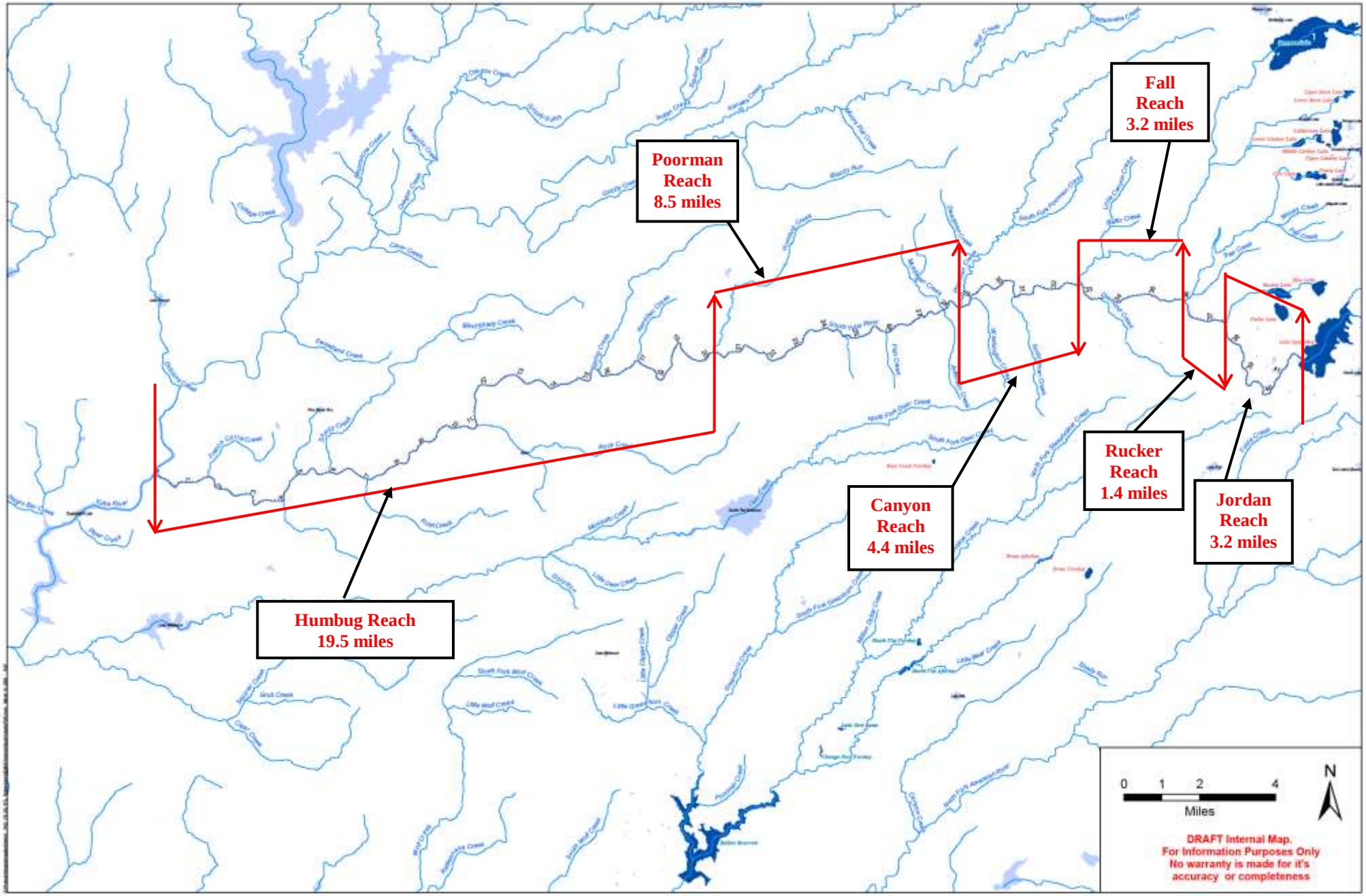


Figure I-1. Water Segment Delineation for the South Yuba River for Water Temperature Assessment

FACTSHEETS

EVALUATION OF SOUTH YUBA RIVER (BELOW LAKE SPAULDING TO ENGLEBRIGHT RESERVOIR)

BY SEGMENT OR REACH

WATER SEGMENT:	South Yuba River – Reach #1: Jordan Reach (a total of 3.2 River Miles [RM]) from Jordan Creek Confluence (RM 40.2) to Rucker Creek Confluence (RM 37.0)
POLLUTANT:	Water Temperature
SOURCE:	No Source Listed; known available data do not indicate impairment
STATUS of Proposed 2008 303(d) LISTING:	Listed
CVRWQCB STAFF BASIS:	After review of the available data and information, Central Valley Regional Water Quality Control Board (CVRWCB) staff concluded that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards were exceeded.
PG&E RECOMMENDATION:	Do Not List
PG&E COMMENT:	Available receiving water temperature data (PG&E 2008) indicate that the water segment does not exceed either the Sullivan et al. (2000) or the US EPA Region 10 (US EPA 2003) guidelines under normal operations and that the water segment is biologically healthy; therefore, this water body should not be listed for water temperature. Average maximum daily average summer water temperatures in this reach occur in August and are less than 17°C for the 2003 and 2004 sampling periods (PG&E 2008). The CVRWQCB listed the entire South Yuba River from Lake Spaulding to Englebright Reservoir (approximately 41+ RM). Arguments provided in the Water Segment Delineation Factsheet explain the necessity for determining appropriateness of listing or delisting based upon water segmentation of long rivers (30+ miles) with regard to environmental, biological, physical differences, as well as known availability of data within each individual reach (Attachment A).

References

PG&E. 2008. Pacific Gas & Electric Company Pre-Application Document (PAD), prepared by Devine Tarbell and Associates (DTA) for PG&E. June 2008.

Sullivan, K., D. J. Martin, R. D. Cardwell, J. E. Toll, and S. Duke. 2000. *An analysis of the effects of temperature on salmonids of the Pacific Northwest with implications for selecting temperature criteria.* Sustainable Ecosystems Institute. Portland, OR. 192pp.

U.S. Environmental Protection Agency (US EPA). 2003. *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards.* EPA 910-B-03-002. Region 10 Office of Water, Seattle, WA.

WATER SEGMENT:	South Yuba River – Reach #2: Rucker Reach (a total of 1.4 RM) from Rucker Creek Confluence (RM 37.0) to Fall Creek Confluence (RM 35.6)
POLLUTANT:	Water Temperature
SOURCE:	No source listed; no known available water temperature data in this reach
STATUS of Proposed 2008 303(d) LISTING:	Listed
CVRWQCB STAFF BASIS:	After review of the available data and information the CVRWQCB staff concluded that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards were exceeded.
PG&E RECOMMENDATION:	Do Not List
PG&E COMMENT:	The CVRWQCB listed the entire South Yuba River from Lake Spaulding to Englebright Reservoir (approximately 41+ RM). Arguments provided in the Water Segment Delineation Factsheet explain the necessity for determining appropriateness of listing or delisting based upon water segmentation of long rivers (30+ miles) with regard to environmental, biological, physical differences, as well as known availability of data within each individual reach (Attachment A). There are no known available water temperature data in Rucker Reach, however, water temperature data collected upstream (in Jordan Reach) and downstream (in Fall Reach) indicate that there is no justification for listing this reach on the 303(d) list of impaired water bodies. Additionally, information contained in PG&E's PAD (2008) indicates that the unimpaired hydrology in Septemberin this reach is only 2.4 cfs (50% exceedance) higher than the regulated hydrology and this would not result in significantly different water temperatures in this reach under natural conditions. Therefore, there is no justification for listing the Rucker Reach on the 303(d) list for water temperature.

References

PG&E. 2008. Pacific Gas & Electric Company Pre-Application Document (PAD), prepared by Devine Tarbell and Associates (DTA) for PG&E. June 2008.

WATER SEGMENT: South Yuba River – Reach #3: Fall Reach (a total of 3.2 RM) from Fall Creek Confluence (RM 35.6) to Canyon Creek Confluence (RM 32.4)

POLLUTANT: Water Temperature

SOURCE: No source listed

STATUS of Proposed 2008 303(d) LISTING: Listed

CVRWQCB STAFF BASIS: After review of the available data and information the CVRWQCB staff concluded that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards were exceeded.

PG&E RECOMMENDATION: Do Not List

PG&E COMMENT: The CVRWQCB listed the entire South Yuba River from Lake Spaulding to Englebright Reservoir (approximately 41+ RM). Arguments provided in the Water Segment Delineation Factsheet explain the necessity for determining appropriateness of listing or delisting based upon water segmentation of long rivers (30+ miles) with regard to environmental, biological, physical differences, as well as known availability of data within each individual reach (Attachment A).

Known available water temperature data collected from Fall Reach do show that water temperatures reach 20°C or higher in the summer (PG&E 2008). However, hydrology information contained in PG&E's PAD (2008) indicates that the unimpaired hydrology in September is only 2.4 cfs higher than the regulated hydrology; and this would not result in significantly different water temperatures in this reach under natural conditions in the summer.

Therefore, there is no justification for listing the Fall Reach on the 303(d) list for water temperature.

References

PG&E. 2008. Pacific Gas & Electric Company Pre-Application Document (PAD), prepared by Devine Tarbell and Associates (DTA) for PG&E. June 2008.

WATER SEGMENT: South Yuba River – Reach #4: Canyon Reach (a total of 4.4 RM) from Canyon Creek Confluence (RM 32.4) to Poorman Creek Confluence (RM 28.0)

POLLUTANT: Water Temperature

SOURCE: No source listed

STATUS of Proposed 2008 303(d) LISTING: Listed

CVRWQCB STAFF BASIS: After review of the available data and information the CVRWQCB staff concluded that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards were exceeded.

PG&E RECOMMENDATION: Do Not List

PG&E'S RESPONSE: The CVRWQCB listed the entire South Yuba River from Lake Spaulding to Englebright Reservoir (approximately 41+ RM). Arguments provided in the Water Segment Delineation Factsheet explain the necessity for determining appropriateness of listing or delisting based upon water segmentation of long rivers (30+ miles) with regard to environmental, biological, physical differences, as well as known availability of data within each individual reach (Attachment A).

Known available water temperature data collected from Canyon Reach show that water temperatures reach 20°C or higher in the summer (PG&E 2008). However, hydrology information contained in PG&E's PAD (2008) indicates that the unimpaired hydrology in August and September is virtually identical to the regulated hydrology in the South Yuba River at the Canyon Creek confluence; and this would not result in significantly different water temperatures in this reach under natural conditions in the summer.

Therefore, there is no justification for listing the Canyon Reach on the 303(d) list for water temperature.

References

PG&E. 2008. Pacific Gas & Electric Company Pre-Application Document (PAD), prepared by Devine Tarbell and Associates (DTA) for PG&E. June 2008.

WATER SEGMENT: South Yuba River – Reach #5: Poorman Reach (a total of 8.5 RM) from Poorman Creek Confluence (RM 28.0) to Humbug Creek Confluence (RM 19.5)

POLLUTANT: Water Temperature

SOURCE: No source listed

STATUS of Proposed 2008 303(d) LISTING: Listed

CVRWQCB STAFF BASIS: After review of the available data and information the CVRWQCB staff concluded that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards were exceeded.

PG&E RECOMMENDATION: Do Not List

PG&E COMMENT: The CVRWQCB listed the entire South Yuba River from Lake Spaulding to Englebright Reservoir (approximately 41+ RM). Arguments provided in the Water Segment Delineation Factsheet explain the necessity for determining appropriateness of listing or delisting based upon water segmentation of long rivers (30+ miles) with regard to environmental, biological, physical differences, as well as known availability of data within each individual reach (Attachment A).

Known available water temperature data collected from Poorman Reach show that water temperatures reach 20°C or higher in the summer (PG&E 2008). However, hydrology information contained in PG&E's PAD (2008) indicates that the unimpaired hydrology in the summer is virtually identical to the regulated hydrology in the summer; and this would not result in significantly different water temperatures in this reach under natural conditions in the summer.

Therefore, there is no justification for listing the Poorman Reach on the 303(d) list for water temperature.

References

PG&E. 2008. Pacific Gas & Electric Company Pre-Application Document (PAD), prepared by Devine Tarbell and Associates (DTA) for PG&E. June 2008.

WATER SEGMENT: South Yuba River – Reach #6: Humbug Reach (total of 19.5 RM), from Humbug Creek Confluence (RM 19.5) to Englebright Reservoir (RM 0.0)

POLLUTANT: Water Temperature

SOURCES: No source listed

STATUS of Proposed 2008 303(d) LISTING: List

CVRWQCB STAFF BASIS: After review of the available data and information, CVRWQCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

PG&E RECOMMENDATION: Do Not List

PG&E'S COMMENT: The CVRWQCB listed the entire South Yuba River from Lake Spaulding to Englebright Reservoir (approximately 41+ RM). Arguments provided in the Water Segment Delineation Factsheet explain the necessity for determining appropriateness of listing or delisting based upon water segmentation of long rivers (30+ miles) with regard to environmental, biological, physical differences, as well as known availability of data within each individual reach (Attachment A).

Known available water temperature data collected from Humbug Reach show that water temperatures reach 20°C or higher in the summer (PG&E 2008). However, hydrology information contained in PG&E's PAD (2008) indicates that the unimpaired hydrology in the summer is virtually identical to the regulated hydrology in the summer; and this would not result in significantly different water temperatures in this reach under natural conditions in the summer.

Therefore, there is no justification for listing the Humbug Reach on the 303(d) list for water temperature.

References

PG&E. 2008. Pacific Gas & Electric Company Pre-Application Document (PAD), prepared by Devine Tarbell and Associates (DTA) for PG&E. June 2008.